

Approach To The Treatment of Spontaneous Hemothorax Due To The Anticoagulant Therapy: Report of Three Cases

Antikoagulan Tedaviye Bağlı Gelişen Spontan Hemotoraksta Tedavi Yaklaşımı: Üç Olgu Sunumu

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Abstract

Bleeding is the most important complication of the anticoagulant therapy. The annual risk of bleeding in patients taking warfarin such as; fatal episode is approximately 1%, major episode is 6.5%, and minor bleeding is 21.8%. A small number of hemothorax cases that formed due to anticoagulant therapy, have been reported in the literature. Shock and mortality may be developed in severe bleeding. Hematoma and trapped lung may be occurred, if hemothorax not adequately discharge. When the hemothorax is seen, anticoagulant therapy should be terminated immediately and pleural range to be discharged. In present study, three cases were presented with the literature, which had detected spontaneous hemothorax due to the anticoagulant therapy during the warfarin therapy.

Keywords: Anticoagulation, spontaneous hemothorax, treatment

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Özet

Antikoagulan tedavinin en önemli komplikasyonu kanamadır. Warfarin alan hastalarda yıllık kanama riski; fatal epizod yaklaşık %1, major epizod %6.5, minör kanama ise %21.8'dir. Literatürde antikoagulan tedaviye bağlı az sayıda spontan hemotoraks olgusu bildirilmiştir. Kanama şiddetli ise şok ve mortalite gelişebilir. Hemotoraks yeterli şekilde boşaltılmazsa hematoma ve haps olmuş akciğer oluşumu riski taşımaktadır. Hemotoraks görüldüğünde antikoagulan tedavi hemen sonlandırılmalı ve plevral aralık boşaltılmalıdır. Bu çalışmada warfarin tedavisine bağlı üç olguda gelişen spontan hemotoraks olgusu literatür bilgileri ışığında sunuldu.

Anahtar Kelimeler: Antikoagulanlar; hemotoraks, tedavi

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Introduction

The hemothorax that occurred without any specific trauma, denominated spontaneous or nontraumatic hemothorax. Although spontaneous hemothorax rarely than traumatic hemothorax it have lots of causations. The main causation of the spontaneous hemothorax is

getting anticoagulant and neoplasm. Rare reasons are vascular ruptures such as aortic dissection and arteriovenous fistulas, pulmonary infarction, rupture of pleural adhesions due to pneumothorax, pleural endometriosis, haemophilia, thrombocytopenia and the other conditions that change the homeostasis and idiopathic situations¹. The annual risk of bleeding in patients taking warfarin

such as; fatal episode is approximately 1%, major episode is 6.5%, and minor bleeding is 21.8%². It is classified as major if it is intracranial or retroperitoneal and hospitalization or transfusion can be required or it can cause directly mortality³. Although the anticoagulant therapy has frequently using, a small number of cases have been reported with hemothorax due to anticoagulant therapy in the literature. In this study, the three cases are presented, that have detected spontaneous hemothorax due to warfarin therapy.

Case I

A 26-year-old male patient, which had detected deep venous thrombosis in Doppler ultrasound application for right leg pain. Warfarin treatment was started. Left chest pain was occurred in the eight day of the treatment. In physical examination revealed reduced breath sounds in left lung. Posterior-anterior (PA) chest radiography revealed pleural fluid in left lung. Contrasted thorax computed tomography (CT) viewed 6 cm thickness pleural effusion in the left thorax and formation of fibrotic bands and linear atelectasis in the basalis of left lung. No embolism was observed. Haemoglobin was found 13.4 g/dL (normal values range from 14 to 16 g/dL), international normalized ratio (INR) was found 12.48 in laboratory examination. Warfarin was stopped immediately. Two units of fresh frozen plasma were transfused. K vitamin supplement were given. Tube thoracostomy was applied second day. 700cc hemorrhagic drainage was observed. The fluid was completely drained through the chest drain. Additional process did not apply. After third day, the thorax drain was ended and the patient was discharged.

Case II

A 50-year-old male patient was admitted to our clinic with complaint of chest pain and coughing. He had a history of aortic and mitral valve replacement six months ago. Patients were receiving warfarin. PA chest radiography revealed pleural fluid. Haemoglobin was found 11.4 g/dL. INR was found 2.8 in laboratory examination. Warfarin was ended immediately. K vitamin was given. Two units of fresh frozen plasma were transfused. Tube

thoracostomy was applied six hour later. 600cc drainage was observed. Streptokinase is administered within the pleural hematoma. After the third day of tube thoracostomy, streptokinase (150.000 IU) was diluted in 100 ml of saline and applied to the intrapleural space through the thorax tube during three days. After the intrapleural fibrinolytic treatment (IPFT), it was detected that the decreasing pleural thickening and adhesion with the resolution of the clots in the pleural range. The patient was discharged without need of any other treatment.

Case III

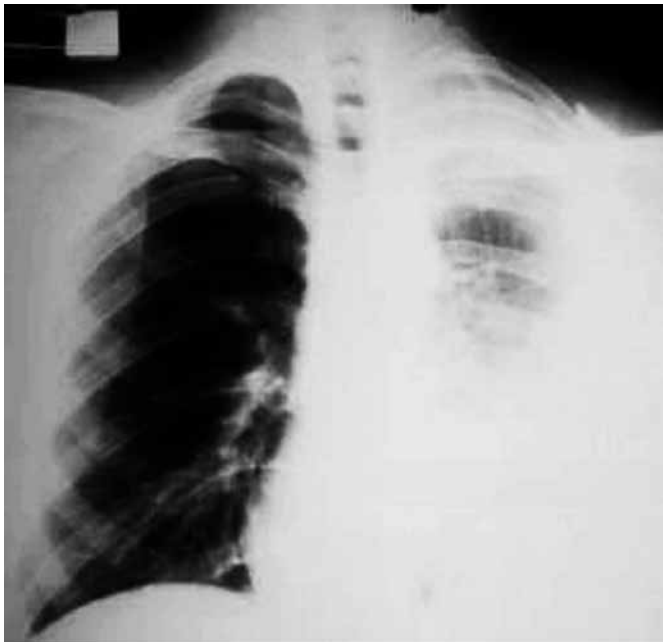
A 50-year-old male patient admitted to our clinic with complaint of right chest pain and dyspnea. He had a history of coronary bypass surgery and mitral valve replacement one year ago. INR was detected as 3.5 and haemoglobin was detected as 12.6 g/dL in patient taking warfarin. Thorax CT revealed pleural fluid and extensive pleural thickening. Also warfarin was discontinued immediately. K vitamin was given and three units of fresh frozen plasma were transfused. Right tube thoracostomy was applied one day later. 800 cc drainage was observed. Streptokinase (150.000 IU) was diluted in 100 ml of saline and applied to the intrapleural space through the thorax tube during three days as case 2. However the decreasing pleural thickening and adhesion could not obtained with the resolution of the clots in the pleural range. Decortication was suggested in this case. But, the patient was not accepted surgery.

Discussion

The complication of the anticoagulant therapy for the pulmonary embolism is the one of the most common known causes of spontaneous hemothorax⁴. There have well documented 20 cases with spontaneous hemothorax due to the anticoagulant therapy⁵. Rostant et al⁶. Were reported 11 cases with hemothorax due to the anticoagulant therapy complication. The five of the reported cases had a history of only heparin usage, four had a history of heparin and warfarin usage, and two had a history of only warfarin usage. They reported that the hemothorax was occurred usually 4 to 7 day after the an-

ticoagulant therapy. Usually dosage was in the therapeutic range in these patients and hemothorax was found in the side of pulmonary embolism. However, recently, spontaneous hemothorax cases were reported due to the low molecular weight heparins^{4,7}. Half of enoxaparine associated major bleeding complications had seen after the third day of therapy^{8,9}. We detected three cases with hemothorax due to oral anticoagulant therapy in our study. One of the patients had a history of deep venous thrombosis and two of them had artificial valve replacement history.

Figure 1: Posteroanterior chest radiography of case 1 showing pleural fluid in left lung.



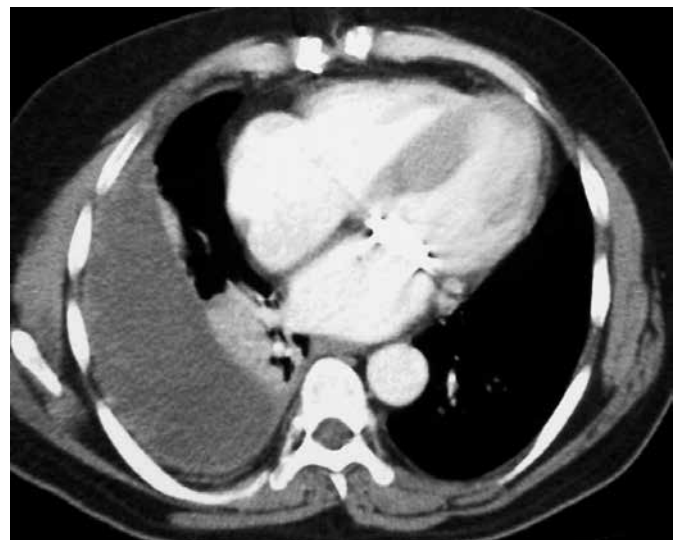
The anticoagulation effects of warfarin can be reversed by four ways. These are; end the treatment; K vitamin replacement; infusion of fresh frozen plasma (FFP); and infusion of concentrated thrombotic factors². Usually the effects are reversed after 3-5 days ending of the warfarin therapy. Intravenous K vitamin provides normal levels of INR at 6-8 hours². It can be too late for life threatening conditions. Especially in patients with 4-5 INR levels, FFP application at the dose of 15 ml /kg can be reversed the antithrombotic effects².

Mortality and morbidity rates are too high in hemothorax

that developed due to anticoagulant therapy for the pulmonary embolism and the four of the reported 20 case was died⁵. Rupture of pulmonary infarct should be suspected when the circulatory and respiratory failure with unilateral pleural effusion occurred suddenly after the 7-10 days from the anticoagulant therapy in the patients with suspected or precised pulmonary embolism¹⁰. There was deep venous thrombosis in our case and any pulmonary embolism was not detected. Hemothorax was occurred in eighth day in this case.

Successful treated cases were reported with thoracostomy or tube thoracostomy in literature¹¹⁻¹³. Promisloff¹¹ described the tube drainage without surgical exploration applied. Dimitri¹² could not be detected pathology and bleeding focus with thoracoscopic exploration after tube thoracostomy in a patient with massive idiopathic hemothorax. Yung et al,¹³ were discharged two liters of blood to the pleural space with thoracostomy in a case with spontaneous hemothorax. However they could not be detected bleeding focus and patient treated with thorax tube.

Figure 2: Thorax CT revealed showing pleural fluid and extensive pleural thickening of case 3.



Clotted hemothorax have seen approximately 5-30% of the hemothorax cases and approximately 40% advanced surgical application is required in these cases due to intrapleural collections, empyema or fibrothorax^{5,14}. Addi-

tional tube application is ineffective for retained hemothorax because of clotted blood and loculations¹⁵. Both aggressive and conservative therapies were advocated in clotted hemothorax treatment. Although thoracotomy is effective application, recently minimally invasive approaches is preferred.

Recently, video-assisted thoracoscopic surgery (VATS) is accepted as an appropriate treatment in clotted hemothorax¹⁶.

Fibrinolytic with streptokinase was reported in lots of

case and it was determined as an effective option in reviews. Fibrinolysis achievement rate was found as 92% in a multicentre study¹⁷.

In conclusion, massive hemothorax is rarely situation in patient that gets oral anticoagulant therapy. However hemothorax may be occurred in patients with high levels of INR. Anticoagulation associated hemothorax therapy must be focused at the correction of coagulopathy. Ending of anticoagulant treatment must be the first step and tube thoracostomy must be applied. Operation decision and timing is dependent on individual foundations.

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